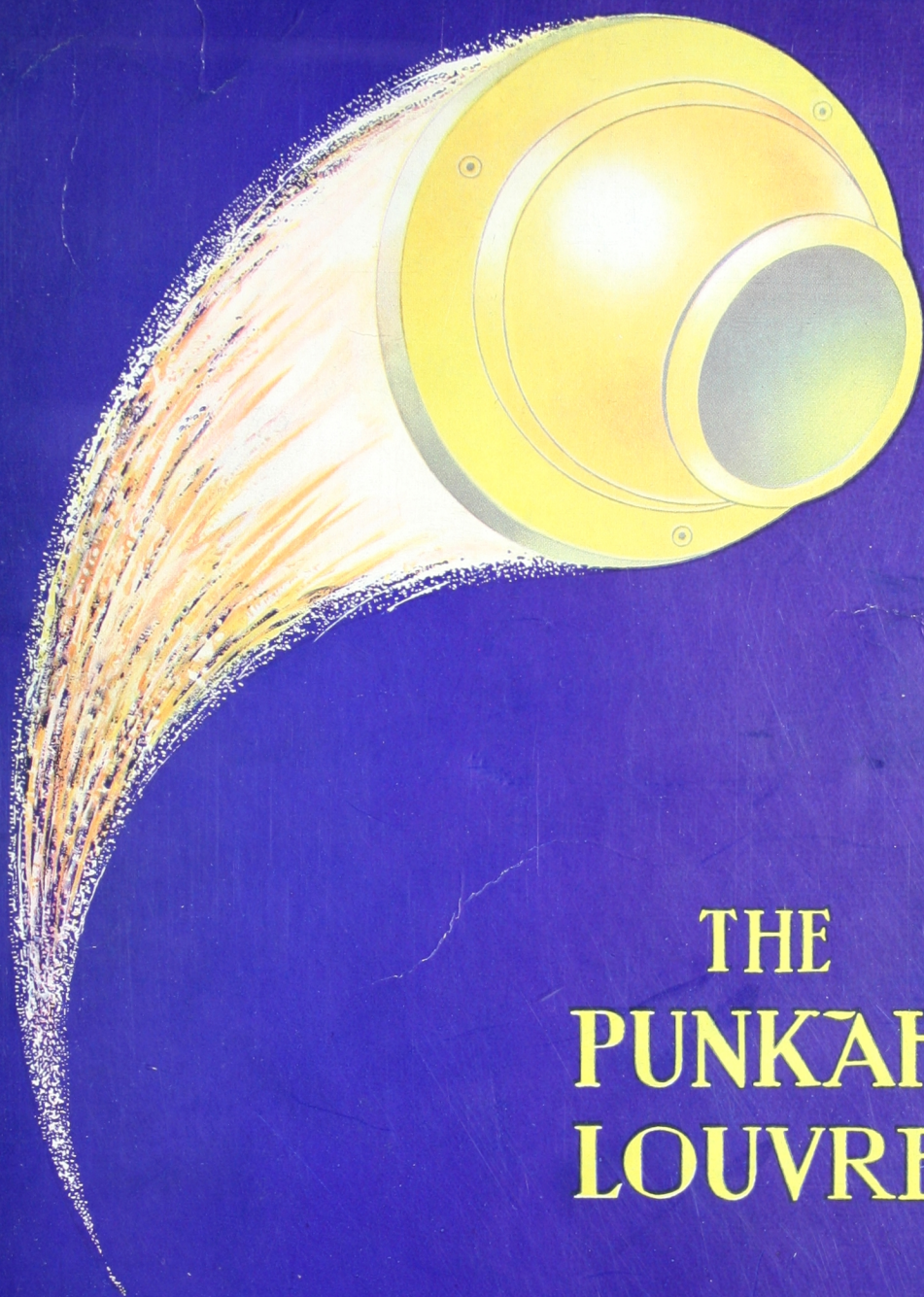


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THE
PUNKAH
LOUVRE



FEB 25 1931

PUNKAH LOUVRE SYSTEM
HEATING AND VENTILATION
FOR
BUILDINGS, SHIPS AND RAILROADS

ORIGINATED BY

THERMOTANK, LTD.

GLASGOW, SCOTLAND

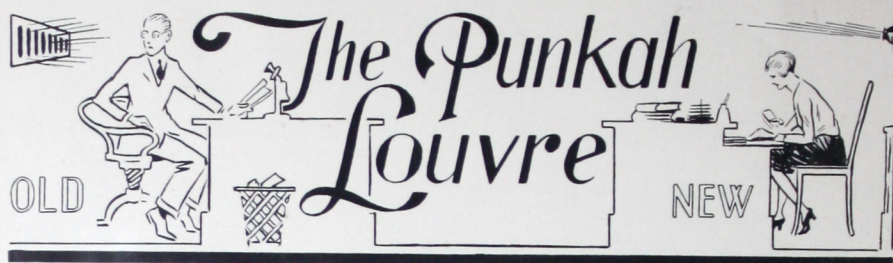
U. S. REPRESENTATIVE

J. K. INGHAM

152 WEST 42ND ST.

NEW YORK, N. Y.

TELEPHONE WISCONSIN 7-1274



A New Principle in Ventilation.

THE conventional method of delivering air to a space being ventilated mechanically by means of Fans is to deliver the air through some grating or ornamental fret or louvre, so proportioned that the velocity of the delivered air is considered to be sufficiently low as to occasion no discomfort or inconvenience to the occupants.

Velocities to the extent of no more than 4 to 8 feet per second are general. Numerous patent diffusers have been introduced to assure this low velocity of entering. The Thermotank Punkah Louvre, however, is a complete departure from all former types of air inlets in that it incorporates the principle of "high velocity delivery" of the ventilating air, involving speeds of 30 to 50 feet per second, while the directional properties of the Louvre enable this to be accomplished without any discomfort. The advantage of this type of delivery is that the delivered air is completely mixed with the atmosphere of the space ventilated, and a stagnant condition of the air impossible. It is generally conceded that the oppressiveness of badly ventilated rooms is usually due not to deficiency of oxygen or excess of carbon dioxide and organic toxins, but to the absence of motion in the atmosphere itself. The cooling power of ventilating air depends on its temperature, humidity, and motion, and is increased by low temperature, low humidity, and high velocity of motion. Unless the cooling is carried to an extreme degree



"A" Type.

A New Principle in Ventilation—*continued.*

it has a beneficial effect on the health and comfort generally, so that a comparatively small amount of air brought into a space at high velocity is an ideal method of ventilation when complete control of the direction of this air is available, in order that it may be arranged to occasion no inconvenience. When we introduced Louvres involving this principle a few years ago, their success was immediate, and their benefits are confirmed by the extent to which our systems were adopted, especially for first class passenger ships, where the necessity for successful ventilation is of paramount importance.

THE PUNKAH LOUVRE itself is intended to be used for the delivery of air, and takes the place of ordinary frets or grid louvres as well as performing the function of propeller fan. In each style the simplicity of its universal movement giving directional control is evident, and the three types manufactured—"A," "B," and "C"—differ only in their method of controlling and shutting off the supply of air.

Type "A" is in the "shut off" position when the nozzle is placed in the recess provided on the outer flange, the position being clearly indicated by the word "shut."

Type "B" controls the output of the louvre by a specially shaped flap operated by a thumb-screw on the outside of the Louvre ball, a "shut off" condition being possible with the Louvre in any position.

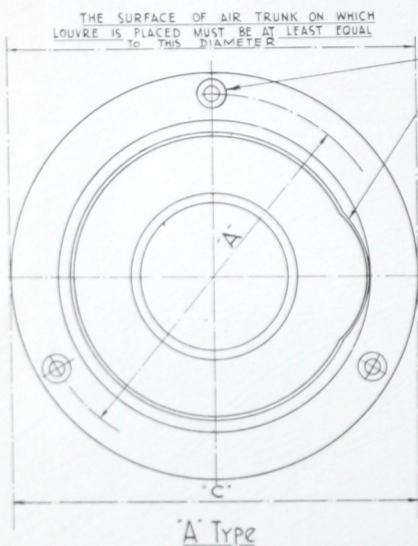
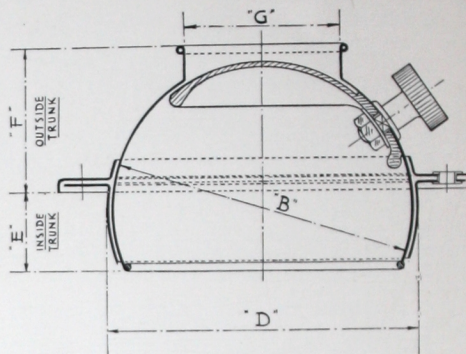
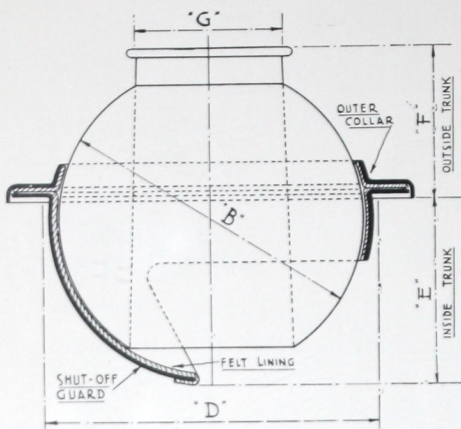


"B" Type.

Type "C" Louvre gives an alternative form of control and is depicted on page 17.

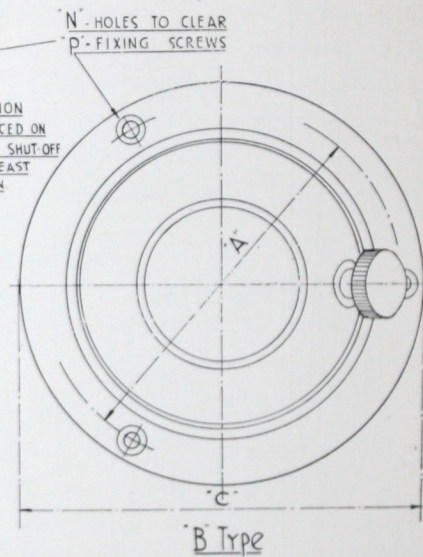
Each type of Louvre has its special features, the conditions and type of installation governing which is the most suited to requirements. These Louvres are made in various sizes, covering a large range of outputs.

Overall Dimensions of Thermotank Standard Punkah Louvres.



THE SURFACE OF AIR TRUNK ON WHICH LOUVRE IS PLACED MUST BE AT LEAST EQUAL TO THIS DIAMETER

SHUT-OFF POSITION
A TYPE SO PLACED ON TRUNK THAT THE SHUT-OFF WILL BE IN THE LEAST USEFUL POSITION



SIZE.	"A." P.C. Dia. of Screws.	"B." Dia. of Ball.	"C." Overall Dia.	"D." Opening in Trunk.	"E." Inside Trunk.		"F." Outside Trunk.	"G." Dia. of Nozzle.	"N." Holes for Fixing.	"P." Dia. of Screws.
					"A." Type.	"B." Type.				
3"	3 3/8"	3"	4 5/16"	3 1/4"	1 9/16"	1 3/8"	1 7/8"	1 1/2"	3	3/16"
4"	4 1/4"	4"	5 1/8"	4 3/8"	2 7/16"	1"	1 11/16"	2"	3	3/16"
5"	5 11/16"	5"	6 9/16"	5 3/8"	3 1/16"	1 1/2"	2 3/16"	2 1/4"	3	3/16"
6"	6 11/16"	6"	7 1/4"	6 3/8"	3 3/8"	2 1/4"	2 3/8"	2 3/4"	3	3/16"
7"	8"	7"	8 3/8"	7 1/2"	4 1/16"	2 3/4"	2 11/16"	3 1/2"	4	3/16"
8"	9 1/4"	8"	9 1/8"	8 1/2"	3 1/4"	2 1/2"	4 1/8"	4 1/4"	4	1/4"
10"	11 3/4"	10 1/2"	12 1/2"	10 11/16"	5 1/16"	Not made.	5 11/16"	5 1/2"	4	1/4"
12"	13 1/4"	12"	14"	12 1/2"	5 11/16"	Not made.	6 3/8"	6 1/4"	6	1/4"

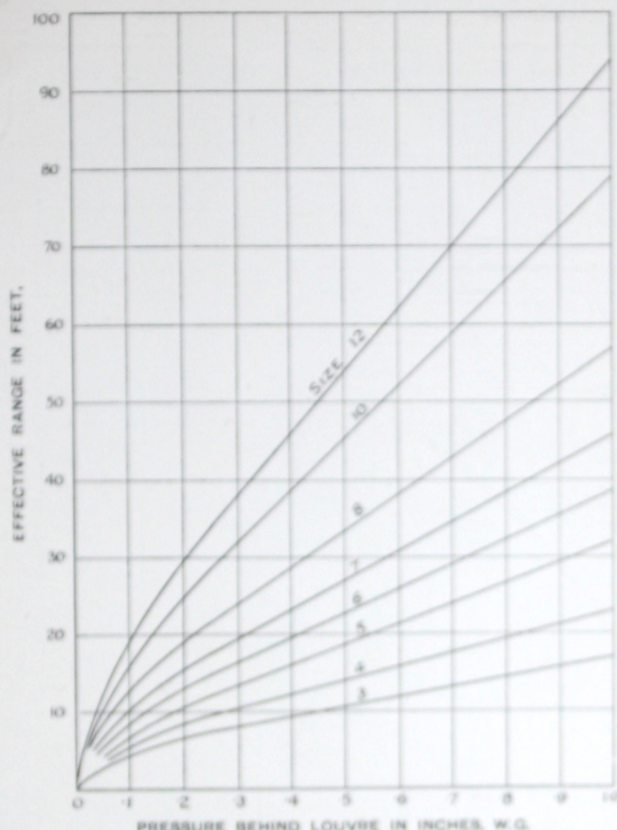


Chart giving Range of Air Stream from Standard Punkah Louvres.

Engineers' Data of Standard Punkah Louvres.

ONE important feature of the Punkah Louvre is that its large radius of action eliminates to some extent the necessity for an extensive system of distributing ducts.

In order to assist Ventilating Engineers in the application of Punkah Louvres to their Ventilating Schemes, the above Chart has been prepared. On a basis of water-gauges the range of action and effect of each size of Louvre is indicated. The actual effect will be in excess of the lengths indicated above, as the range indicated is that at which a velocity of 60 feet per minute may be measured by an Air Meter.

On page 6 a Chart is given covering the outputs of the Louvres at the various static pressures over a range of 0.1 in. to 1 in. W.G. The operation of both Charts is evident.

It is inadvisable to use water-gauges above 0.3 in. where a high degree of quietness is required. For industrial purposes, or where noises are unimportant, water-gauges up to 1 in. are practicable.

It should be noted that the distribution throughout the system is more uniform where the Louvre pressure bears a high ratio to the pressure drop in the duct-work.

Dimensions of the Standard "A" and "B" Louvres are given on page 4, and care should be taken to maintain a reasonable clearance between the back of the duct and the Louvre in order to prevent the restriction of output.

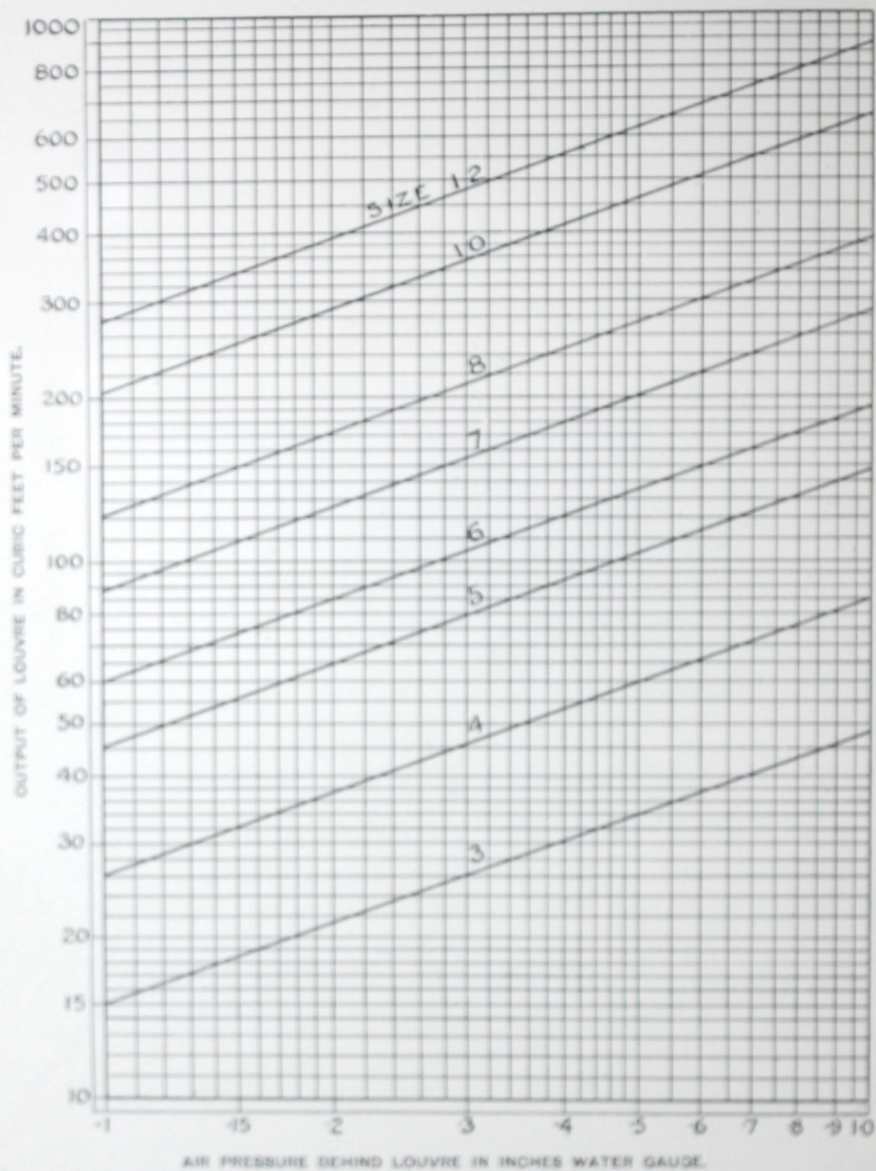


Chart giving Outputs of Standard Punkah Louvres.



THE CHRYSLER BUILDING, NEW YORK
THE WORLD'S TALLEST STRUCTURE
77 STORIES

Thermotank Punkah Louvres are applied to the ventilation of this building

THERMOTANK
LIMITED



SUN LIFE ASSURANCE COMPANY OF CANADA'S BUILDING, MONTREAL

25 STORIES

THE LARGEST BUILDING IN CANADA

VENTILATED WITH PUNKAH LOUVRES



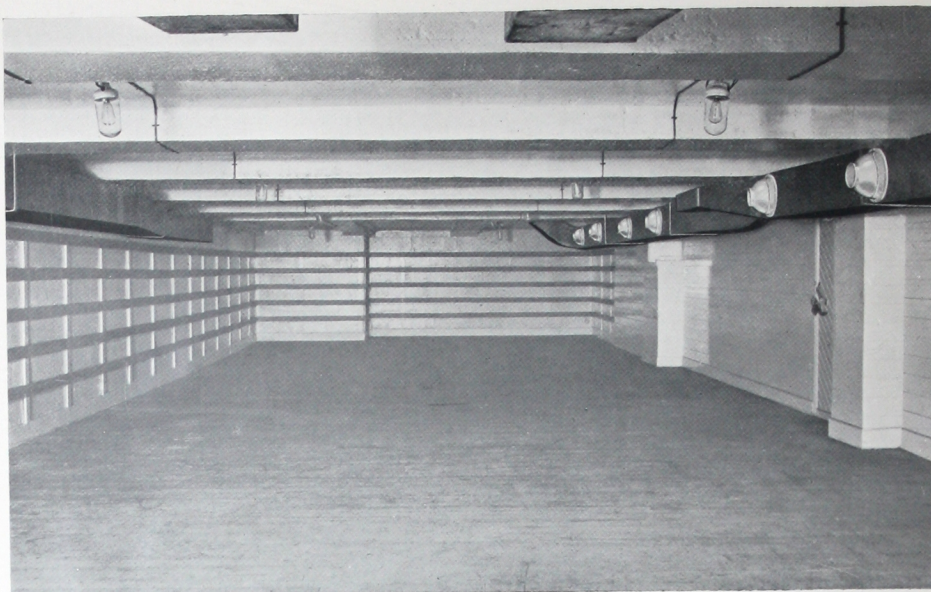
IN A BALLROOM

THE service of the Punkah Louvre covers a wide range of application; its unobtrusive nature prevents its interference with the decorative features, as will be seen from the photograph of the Ballroom above, where the Louvres are spaced around the frieze below the columns. The fret over the shell is used for recirculating purposes, and in cold weather, with the Louvres blowing horizontally, the effect of the high velocity jet was not perceptible, while in warm conditions a slight deflection of the Louvres brought the air streams on the dancers. With delicate perfume introduced into the air system, the diffusion of the odour throughout the Hall was practically instantaneous.



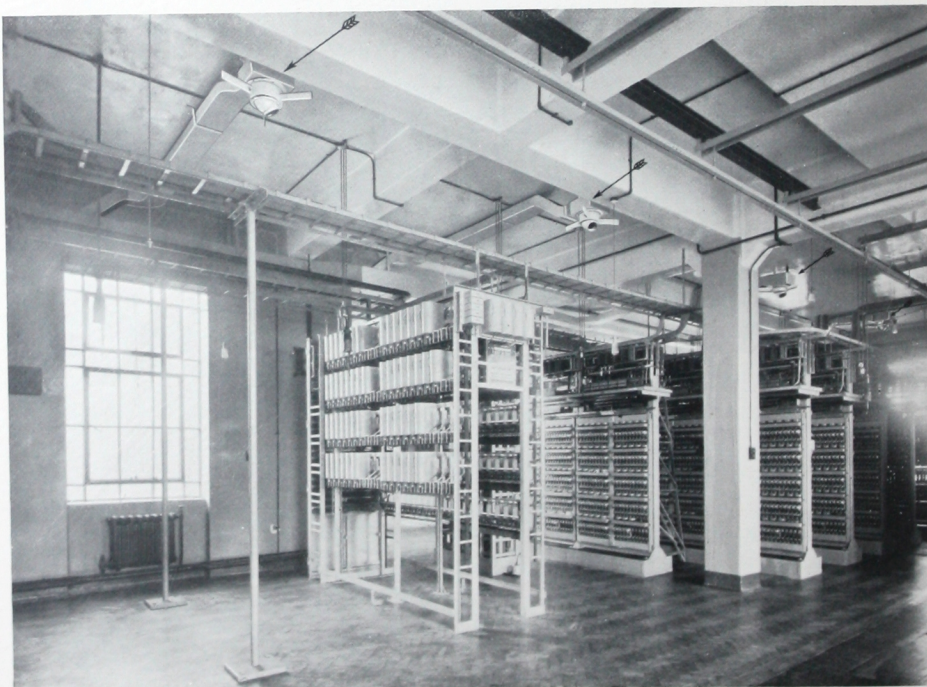
TEA OR LUNCH ROOM

Ventilated by means of Thermotank Revolving Punkah Louvres



IN COLD CHAMBERS

THE turbulent action of the Punkah Louvre makes its use very effective in Cold Chambers where air is used as a medium between the Cold Room and the Refrigerating Plant. The above shows the Punkah Louvres at a Lyons Restaurant in London.



IN A TELEPHONE EXCHANGE

IN Automatic Telephone Exchanges, the automatic apparatus itself is generally of such size and so closely packed, that successful ventilation by ordinary means is difficult.

The Post Office Authorities of England have decided, after a considerable amount of experiment, that the Thermotank Revolving Punkah Louvre alone, or in conjunction with the ordinary fixed Punkah Louvre, gives the most satisfactory results, and their installation is practically standardised through all modern Exchanges.

Punkah Louvres on the Railways.

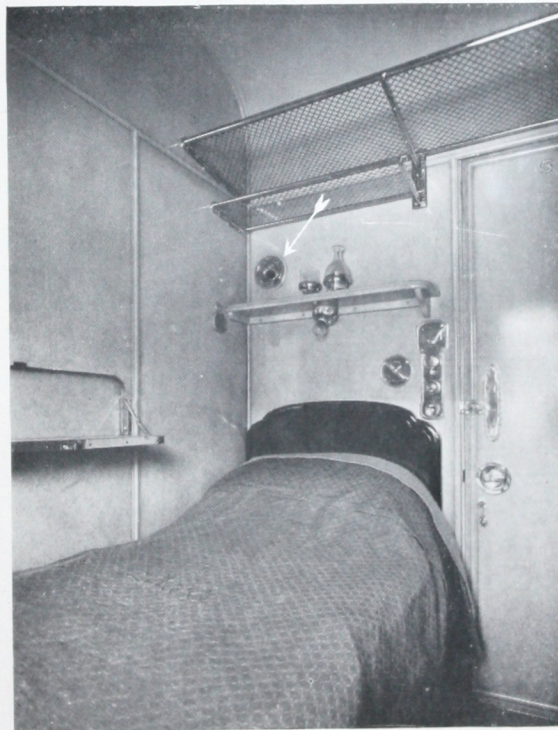
MANY efforts have been made to solve the ventilating problems of Railway Carriages, and while isolated installations of a mechanical type have been used, generally the duty is met by the use of roof or Louvre Ventilators, lowering windows, with or without the assistance of Propeller Fans. The essential features in a successful mechanical system for Railway Carriages are :—

1. The Apparatus must be compact.
2. The air delivered to the compartments or coach must be thoroughly cleansed from the dust and smuts generally associated with railway travelling.
3. The delivery points should be under the ready control of the passengers and attendants with regard to volume and "direction of blow."

4. Where separate compartments are being served by the same Ventilating Unit, a means of controlling the temperature of the air should be available to the occupants of each compartment.

We have developed and applied very successful schemes incorporating the above properties.

The accompanying pictures show the application of a "Thermo-Reg" System (see page 17) to the Luxury Sleeping Cars of the London and



Courtesy of Railway Gazette

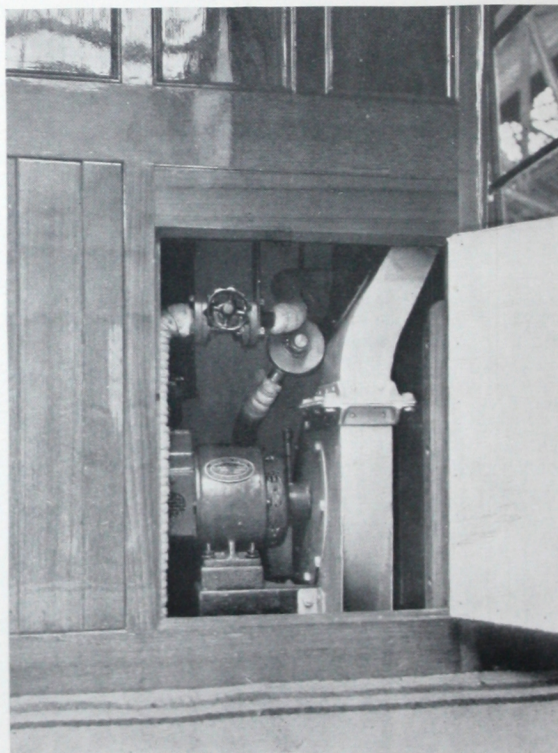
FIG. 1.—Compartment in sleeping car on Railway Carriage showing "Thermo-Reg" Louvres situated above bed-head shelf.

Punkah Louvres on the Railways—continued.

North-Eastern Railway, England. The Fan Unit shown on Figure 2 is accommodated below a dressing table in the lavatory, and supplies filtered air to hot and cold air trunks effectively enclosed in the roof of the corridor, where also the steam heater for the hot air is concealed. The "Thermo-Reg" Louvres shown in the berth give each Passenger a personal control over the temperature, volume, and direction of the ventilating air, and as will be noticed, can readily be manufactured in material and finish to harmonise with the decorative scheme and other fittings. The air entering the Fan is effectively filtered by being passed through a Filter of the Oil Film type. This Filter has proved quite effective in eliminating even smoke. Provision is made for recirculating the air in the Coach, which is convenient for economy in heating steam during very cold weather.

The Punkah Louvre System is particularly valuable for the ventilation of Railway Cars in Tropical Districts, where the high velocity delivery eliminates the necessity of Propeller Fans, and at the same time ensures a continuous supply of fresh air entirely free from dust.

Where cooling or air conditioning is applied to Railway Coaches, the Punkah Louvre may be regarded as an additional asset in giving relief during excessively hot spells.



Courtesy of Railway Gazette

FIG. 2.—Supply Fan arranged below dressing table in toilet of sleeping car.

In the Air.



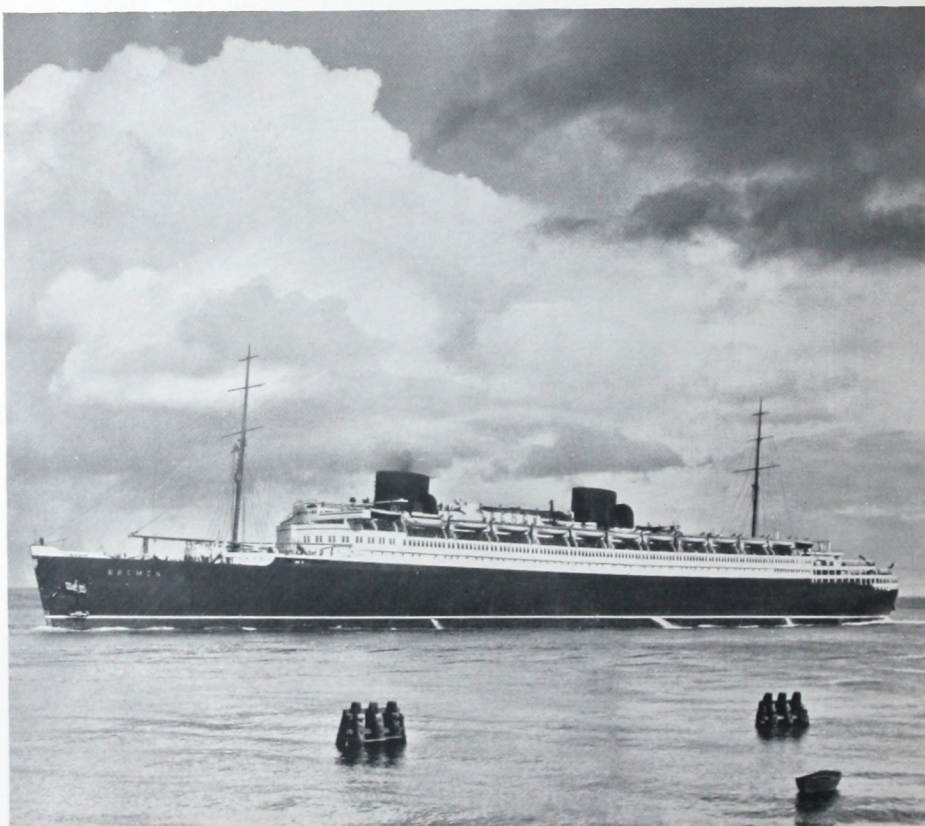
The "Graf Zeppelin" (Germany)

Punkah Louvres fitted.

On Board the S.S. "Bremen."

AS the largest building in the world did not overlook the Punkah Louvre in their consideration of Ventilation, it is natural that the fastest ship in the world should also be extensively equipped with this fitting. The s.s. "Europa" follows her sister ship in securing the advantages of Punkah Louvre Ventilation, and this is in common with almost all modern passenger ships, from the large and luxurious liner to the neat and graceful yacht of the millionaire.

Over six hundred vessels of all classes have been fitted with Punkah Louvres since the introduction of these eight years ago.



S.S. "BREMEN."

Revolving Punkah Louvres.

NATURE'S ventilation, the wind, blows in all directions, and there is no stagnation and no corner which does not at some time receive a blow of fresh air.

The Punkah Louvre system has the advantage over the older methods of mechanical ventilation in so far that these fittings can be arranged to direct the air stream where desired.

The Thermotank Revolving Punkah Louvre goes a step further, and in revolving, ventilates in all directions.

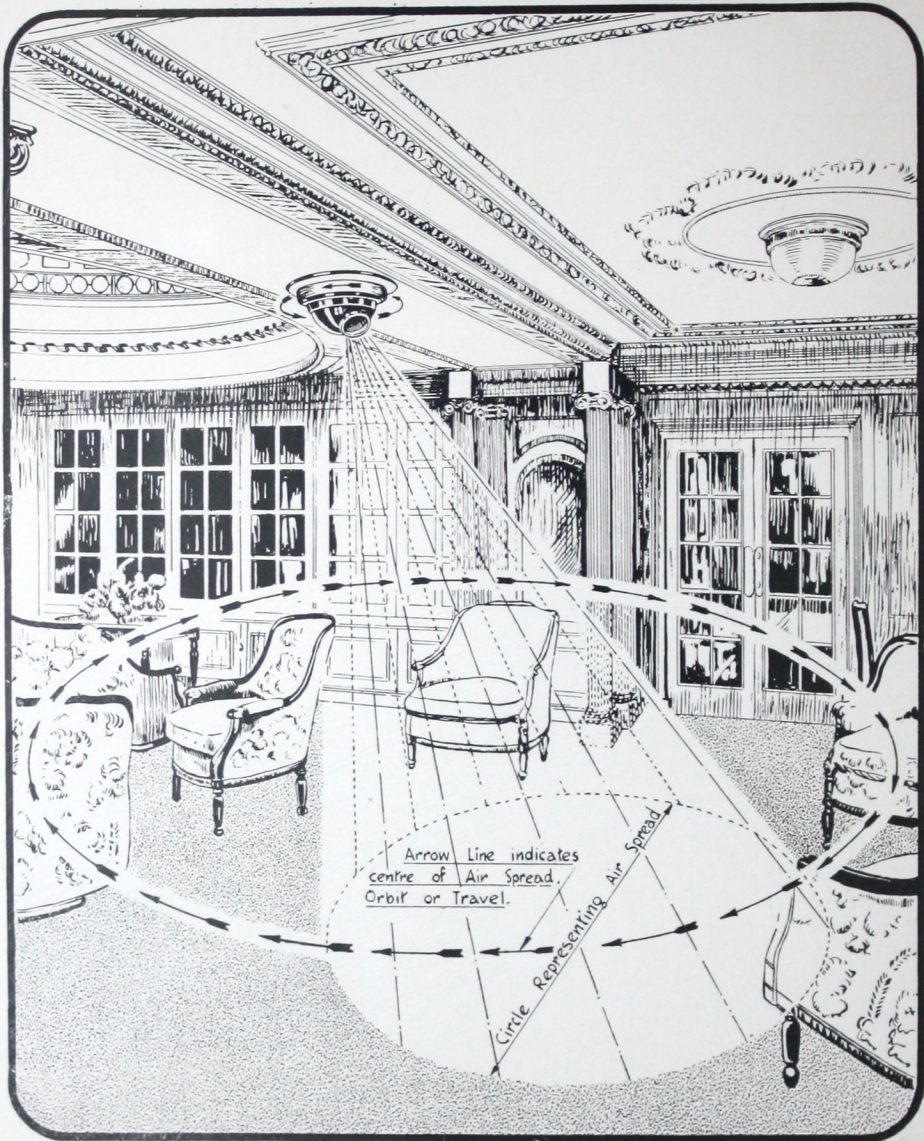
The high velocity of the concentrated jet gives the Louvre a large radius of effect, and the rotation ensures that every part within the radius is thoroughly ventilated.

The angle of the air jet may be varied at will ; it may be made to blow along the ceiling overhead or deflected downwards as required. The Revolving Punkah Louvre is entirely self-operating, the rotation being automatically maintained by the outflowing air, and requires no additional motor or complicated gear to drive it.

We may point out that not only does our new Louvre give all the advantages of the old time hand punkah and the more recent electric oscillating propeller fan in giving a swirling or breezy motion to the air, but it has the additional merit of supplying fresh air drawn direct from the outside atmosphere.

These Louvres are specially suited for Dining Rooms and other Public Rooms, Swimming Baths, etc.

They have been generally adopted for the ventilation of Automatic Telephone Exchanges by the British Post Office Authorities as the most efficient system, after extensive tests in their application to this class of work. (*See also pages 9, 10, and 16.*)



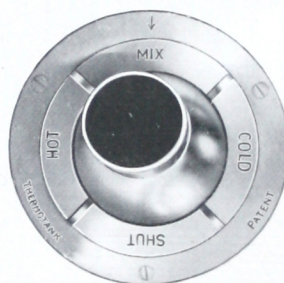
Pictorial Illustration of the Action of the
Thermotank Revolving Punkah Louvre.

“Thermo-Reg ” Louvres.

THE “Thermo-Reg ” System of Ventilation has been introduced to meet the objections that are frequently raised against the use of hot air where separate spaces are heated by a common system, particularly where these spaces are small and preferably under the control of an individual occupant, such as Hotel Bedrooms, Cabins on board ship, Railway Sleeping Berths, etc.

In this system arrangements are made by means of specially designed Louvres and Air Ducts to give individual personal control over the temperature of the air with which the apartment is being ventilated. A simple rotation of the Louvre fitting controls the temperature of the air delivered between the extremes of hot and cold arranged for in the system.

The “Thermo-Reg ” Louvre gives at the same time the directional control of the issuing air as in the case of the ordinary Punkah Louvre itself. The fitting, therefore, gives a control which embraces temperature volume, and direction, and these results can be secured equally throughout a large range of rooms, although all are connected and supplied from a single and simply operated plenum heating system.



When this Louvre is fitted to an ordinary trunk and not in conjunction with hot and cold trunks, it gives an ordinary Punkah Louvre service with a delicate volume of control by the rotation of the inner sleeve. The marking for the Louvre manufactured for this purpose is, of course, limited to “open ” and “shut,” and the Louvre is designated as Type “C ” Punkah Louvre.

The source of heating in the “Thermo-Reg ” System may be obtained from steam, hot water, or electricity.

This system is extensively fitted to many first-class liners, and has been applied to Luxury Sleeping Cars in British Railways. One illustration of the latter is given on page 11.

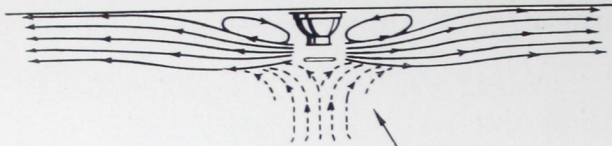


FIG. 1.

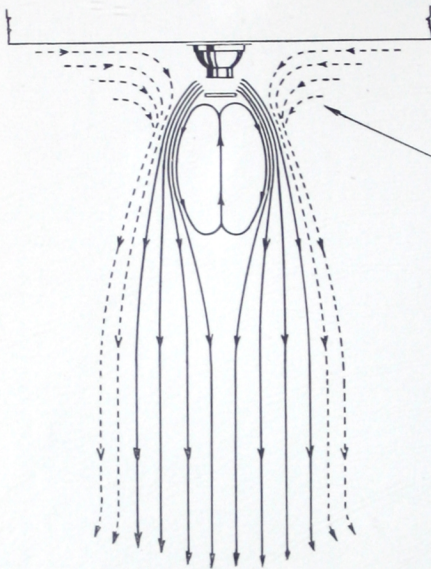


FIG. 2.

Induced Air
Currents.

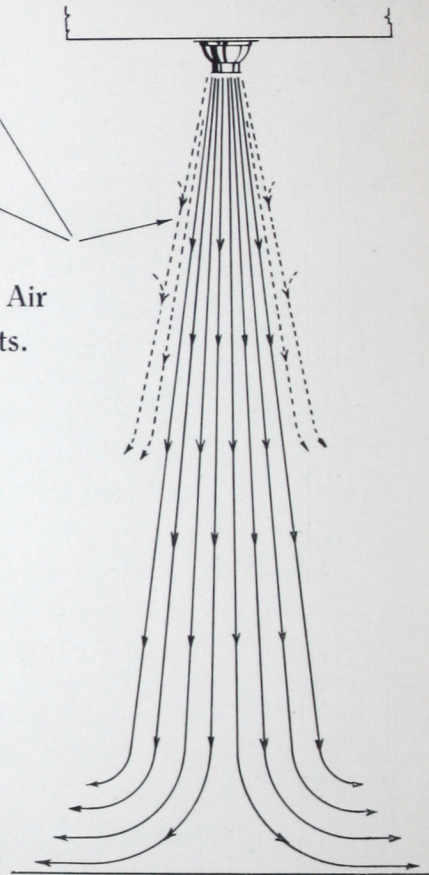


FIG. 3.

WHERE Louvres are required to give service suitable for both warm and cold climatic conditions, it is sometimes convenient that the air delivery of the Louvre may be readily changed from the concentrated high velocity form to a soft and widely distributed blow. Diffusers suitable for attachment to Standard Punkah Louvres are available which are capable of converting the concentrated high velocity jet into a diffused but solid air cone wherein the velocity does not exceed one-tenth of that created by the uninterrupted jet.

Figure 2 indicates this type of delivery, while Figure 1 shows an alternative type of diffused delivery which can be obtained by use of a Diffuser. The uninterrupted delivery is that as indicated in Figure 3, while the photograph itself shows the actual appearance of the Louvre with Diffuser.

Thermotank Punkah Diffusers.





